

## **REMARKS**

Claims 1-27 are pending in the application. In the Office Action, the Examiner withdrew the allowance of claims 1 and 2, while rejecting claims 1, 2, 8, 12, 15, and 22-27. The Office Action indicates that claims 3-7, 9-11, 12, 14, and 16-21 contain allowable subject matter.

### ***Claim Rejections – 35 U.S.C. § 103***

Claims 1 and 2 are rejected as obvious in view of Schuegraf (U.S. Pub. 2003/0062566). The Examiner concedes that Schuegraf fails to teach the claimed range of the phosphorous atom containing gas. The Examiner, however, asserts that it would have been involved routine experimentation because the phosphorous containing gas is allegedly a “result effective variable”. The Examiner also argues that the claimed range has not been established as critical.

Applicants have carefully considered the rejection set forth in the Office Action and request that it be withdrawn.

To support the obviousness rejection, the Examiner must demonstrate that the phosphorous containing gas is a “result effective variable”, i.e., a variable which achieves a recognized result. This must be done before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977). The Office Action is devoid of any evidence establishing that the phosphorous containing gas is a “result effective variable”. The cited prior art appears to only discloses the use of phosphine gas as a precursor for

forming a polycide layer. Hence, a proper *prima facie* case of obviousness has not been established.

Even if the Examiner could successfully establish that the phosphorous containing gas is a “result effective variable”, Applicants urge that criticality already has been established for the claimed range. The claimed range achieves unexpected results relative to the prior art. Reference is made to page 5, lines 1-15 and the Examples set forth in the specification, which detail that the claimed range will prevent the gas from being ineffective or from deteriorating the film quality. Hence, silicon atoms of the polysilicon layer will be prevented from diffusing.

Applicants note that the claimed range is critical to filling lattice defects in the top face or vicinity of the polysilicon layer with phosphorous atoms without high dependence on relatively high temperatures. This prevents or inhibits silicon atoms from diffusing from the polysilicon layer without heavy dependency on processing temperature. The criticality of the range is discussed throughout the specification. For example, compare Example 2 that demonstrates 0.32% volume of phosphine gas (within the claimed range) has good results, whereas Reference Example 1 using 0.16% volume of phosphine gas has unacceptable results.

It should also be noted that “obvious to try” is not the standard for setting forth a *prima facie* case of obviousness. The cited prior art fails to provide any teaching, hint, or suggestion regarding the claimed range of phosphorous containing gas, which has not been established as a “result effective variable”.

\* \* \*

Claims 8, 12, 15, and 22-27 are rejected as obvious in view of Doshi (U.S. 6,277,720) and Hashimoto (6,251,188).

Applicants respectfully request that this rejection be withdrawn. It is also noted for the record that this matter was discussed with the Examiner, who agreed that the rejection should be withdrawn.

As discussed in the previous response, Hashimoto only qualifies as 102(e) prior art and is commonly assigned to the assignee of the present application. This application and the Hashimoto patent were, at the time the invention was made, owned by, or subject to an obligation of assignment to Tokyo Electron Limited. Hence, Hashimoto should be excluded as prior art under 35 U.S.C. § 103(c).

As noted in the Office Action, Doshi fails to hint, suggest, or teach certain features present in claims 8, 12, 15, and 22-27. Therefore, the obviousness rejections should be withdrawn.

\* \* \*

Applicants also note that the parent case to Hashimoto '188, Hashimoto (US 6,022,586), should not be considered in deciding whether the invention is obvious because it only qualifies as 102(e) prior art. The application and the Hashimoto '586 patent were, at the time the invention was made, owned by, or subject to an obligation of assignment to Tokyo Electron Limited. Hence, Hashimoto '586 should be excluded under 35 U.S.C. § 103(c).

\* \* \*

Applicants also note that both Hashimoto patents claim priority from the following application: JP 09-065453. This publication was previously forwarded to the

Examiner via an Information Disclosure Statement, and is not believed to be adverse to the present application for the reasons set forth in the previous Amendment of March 24, 2003.

### CONCLUSION

Applicants respectfully assert that the application should be allowed. If any additional fees are due in connection with the filing of this response, such as fees under 37 C.F.R. §§ 1.16 or 1.17, please charge the fees to Deposit Account No. 02-4300. Any overpayment can be credited to Deposit Account No. 02-4300.

Respectfully submitted,

Date: December 18, 2003      Signature:



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